



Testing Primer
**Testing SMB/CIFS file
sharing performance.**



Agilent Network Tester

Introduction

Server Message Block (SMB) is an application-level client-server protocol that enables sharing resources - files, printers and serial ports between users on the network. Microsoft version of SMB running over TCP/IP is called Common Internet File System (CIFS) and is used by Microsoft Windows OS to provide access to shared Windows resources such as files and printers.

Due to enormous popularity of Windows OS, CIFS protocol traffic has become extremely common in modern TCP/IP networks. On internal LANs or Intranets that are often comprised of hundreds or thousands of personal workstations running Microsoft Windows, CIFS protocol can account for majority of traffic passed between hosts.

As CIFS protocol transactions carry data payload, modern security devices, such as Firewalls and Intrusion Detection Devices, often implement CIFS-specific enforcement that ensures security and integrity of file sharing transactions. Additionally, due to widespread presence of virus and worm infections, security devices deploy CIFS-aware deep inspection to find and block these malicious elements embedded in files carried by CIFS protocol.

As CIFS deep inspection and application aware security requires significant amounts of processing on part of security devices, these devices are likely to become a source of performance bottlenecks and severely compromise quality of network user experience.

To ensure the required levels of scale and performance, CIFS-aware devices must be tested with realistic file sharing traffic consisting of real CIFS protocol transactions. Malicious elements such as virus and worm simulations need to be added to CIFS test traffic to verify resilience and performance levels under negative load.

Agilent Network Tester provides unique CIFS testing capabilities that measure performance and validate stress resilience of network devices that process CIFS traffic. Combined with native support for over 20 common application protocols and virus and worm simulations, Network Tester is the only testing tool on the market that allows to subject the CIFS-aware devices to realistic network load to guarantee the required levels of performance and user experience.

Network Tester SMB/CIFS Protocol Support

Network Tester provides comprehensive SMB/CIFS protocol support that allows to simulate real-world Microsoft file sharing clients. Simulated clients can generate diverse and realistic CIFS traffic that contains variety of protocol transactions:

- Authentication with SMB/CIFS server
- Mounting of SMB/CIFS file share
- Reading files from remote SMB/CIFS server
- Removing files from remote SMB/CIFS server
- Creating files on remote SMB/CIFS server
- Writing files to remote SMB/CIFS server

Network Tester SMB/CIFS protocol support is implemented in intuitive and easy to use SAMBARead and SAMBAWrite protocol Bricks. The SAMBA Bricks interface allows for full control over SMB/CIFS traffic generation and includes the following configurable parameters:

SAMBARead Brick

- SMB/CIFS server name or IP address
- Share name
- SMB/CIFS user name
- SMB/CIFS user password
- Caching
- Number of bytes to read
- Data block size
- Data integrity verification
- Reading offset
- Optional delete
- Stats reporting interval
- User-defined string signatures used for operation integrity verification
- File name or file list to read
- MD5 hash
- Read operation timeout
- Read operation delay

SAMBAWrite Brick

- SMB/CIFS server name or IP address
- Share name
- SMB/CIFS user name
- SMB/CIFS user password
- Caching
- Number of bytes to write
- Data block size
- Write method (Append, Erase, Normal, TruncateOnOpen, TruncateOnClose)
- Writing offset
- Optional delete
- Stats reporting interval
- Option to write unique & verifiable data
- User-defined string signatures used for operation integrity verification
- File name or file list to write
- MD5 hash
- Write operation timeout
- Write operation delay

For detailed description of the Network Tester SMB/CIFS protocol Brick interface please see the Network Tester Netpressure Brick Reference document.

Transaction Variability with SMB/CIFS protocol

Test engineers can use the full power of Network Tester unique Transaction Variability feature to create realistic distributions of SMB/CIFS protocol parameters that result in file sharing test traffic that is indistinguishable from that generated by real users on the network:

- SMB/CIFS server distributions
- User ID and password distributions
- File size and file name distributions to read and write

And many others.

Multi-protocol realistic traffic mixes

As real-world network traffic is always a rich mix of protocols, Network Tester provides support for over 20 application protocols for unique testing realism and precision. The following protocols are supported:

- HTTP, HTTPS, FTP, SMTP, POP3, DNS, Telnet, RTSP, RTP, IGMP, SIP, H.323, MGCP, SNMP, NFS, CIFS, ICMP, Traceroute, NNTP, Jabber, DHCP, Raw TCP, P2P File Sharing as well as Stateful Capture/Replay

Combining CIFS traffic with other common protocols such as HTTP, FTP, VoIP, streaming video or Instant Messaging allows test engineers to create complex and realistic profiles that emulate traffic generated by real network users. This translates into unparalleled test realism and allows to discover potential bottlenecks before it affects real network performance.

Testing under malicious load

Adding Network Tester simulated DoS attacks to the test traffic profile allows test engineers to measure performance of devices and networks under malicious load.

Network Tester also provides unique in industry library of ~30,000 real virus and worm signatures that while being absolutely benign, are treated by security and anti-virus devices as a sign of real infection.

The virus and worm signatures can be embedded at will in Network Tester CIFS or other protocols data payload to test security devices threat detection or blocking rate performance as well as real-world stress resilience.

Agilent Application Mix Real-World Test Library

From release 3.8, Agilent Network Tester software includes unique Application Mix Real-World Test Library. The Library consists of ready-to-run tests (TestPlans) that implement traffic profiles based on various statistics collected in real-world networks.

For CIFS-aware devices, Application Mix Real-World Test Library includes Real-World Microsoft File Sharing Traffic Profile that implements file size distribution and user behaviour patterns typical for real-world LAN file sharing environment.

Agilent Application Mix Test saves test engineers hundreds of hours of test development time and helps to assess real-world performance and stress resilience limits of devices and networks in controlled lab conditions.

For detailed information on Agilent Application Mix Real-World Test Library please see the **Agilent Application Mix Product Flyer 5989-5077** document found at <http://advanced.comms.agilent.com/networktester/products/app-mix-flyer.htm>.

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